

CLAIMS:

1. A method for combating the formation of emulsions in production fluid, comprising the step of commingling fluid with the production fluid so that the commingled fluid has an oil to water ratio outside a range of oil to water ratios at which emulsions are liable to form, and characterised by the step of:

detecting either (a) a ratio of around 50% oil and 50% water by volume in the production fluid at which emulsions form, or (b) the presence of emulsions in the production fluid.

10

2. The method as claimed in claim 1, wherein the detecting step comprises the steps of measuring the ratio of oil to water in a production fluid, and detecting if the oil to water ratio is inside the range of oil to water ratios at which emulsions are formed.

15

3. The method as claimed in claim 2, wherein the measuring step and subsequent detecting step comprises comparing the volumetric flowrate of oil separated from the production fluid with the volumetric flowrate of water separated from the production fluid.

20

4. The method as claimed in claim 1, wherein the detecting step comprises using a nucleonic level sensor or some other appropriate sensor installed in a suitable vessel (16,16',60,60') to detect the formation of emulsions in the production fluid.

25

5. The method as claimed in any preceding claim, including the additional step of adjusting the amount of fluid to be commingled with the production fluid in response to the detecting step to maintain the commingled fluid has an oil to water ratio outside a range of oil to water ratios at which emulsions are liable to form.

30

BEST AVAILABLE COPY

6. The method as claimed in any preceding claim, including the additional step of separating a fluid from the production fluid, and the commingling step comprising commingling at least a portion of said fluid separated from the production fluid with the production fluid before the production fluid is detected for emulsions.

7. The method as claimed in claim 6, wherein the fluid separated and commingled with the production fluid comprises oil or water.

8. The method as claimed in claim 6 or 7, wherein the separating step takes place at a host facility (2) or at or near at least one wellhead (5).

9. The method as claimed in claim 6, 7 or 8, wherein the separating step takes place in a retrievable module (7) for use with a modular seabed processing system.

10. The method as claimed in any one of claims 6 to 9, wherein both the separating and commingling steps takes place in a retrievable module (7) for use with a modular seabed processing system.

11. The method as claimed in any one of claims 1 to 9, wherein the commingling step takes place in a retrievable module (7) for use with a modular seabed processing system.

12. The method as claimed in any preceding claim, wherein the commingling step takes place at or near at least one wellhead (5).

13. A system for combating the formation of emulsions, comprising commingling means (10) for commingling fluid with the production fluid so that the

BEST AVAILABLE COPY

14

commingled fluid has an oil to water ratio outside the range of oil to water ratios at which emulsions are likely to form, characterised by:

- means (22,24,30;42,48,49) for detecting either (a) a ratio of around 50% oil and 50% water by volume in the production fluid at which emulsions form, or (b)
- 5 the presence of emulsions in the production fluid.

BEST AVAILABLE COPY